



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/733,762

12/12/2003

Kazuo Yamada

900-485

8722

23117

7590

01/09/2008

NIXON & VANDERHYE, PC  
901 NORTH GLEBE ROAD, 11TH FLOOR  
ARLINGTON, VA 22203

EXAMINER

RUTHKOSKY, MARK

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

01/09/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/733,762	<b>Applicant(s)</b> YAMADA ET AL.	
	<b>Examiner</b> Mark Ruthkosky	<b>Art Unit</b> 1795	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 October 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,5-8 and 11-16 is/are pending in the application.
- 4a) Of the above claim(s) 5 and 6 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1,7,8 and 11-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/26/2007 has been entered.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 12 and 15 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The specification does not teach the limitation that polymer battery has a value of a ratio between the distance D2 and the distance D1 is set to be greater than 0% and 20% or less. Applicant states pages 21-22 provide support for the amendment; however, the specification does not include the claimed subject matter. The specification includes the disclosure, "Herein, it is appropriate for D 1 to be approximately 0.5 to 2 mm, it is appropriate for D2 to be

approximately 0 to 1.8 mm, and more preferably approximately 0.1 to 1.8 mm, and in particular it is preferable for D2 to be approximately 10 to 50% of D1 and more preferably to be approximately 20% of D 1.” This does not support the amendment that reads, “a ratio between the distance D2 and the distance D1 is set to be greater than 0% and 20% or less.” There is no support for the end point of the range of greater than 0% or an end point of less than 20% as the claimed range.

***Claim Rejections - 35 USC § 102***

The rejection of claims 1, 4, 7, 8 and 11 under 35 U.S.C. 102(b) as being anticipated by Gauthier et al. (US 5,415,954) has been overcome by applicant's amendment to the claims.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 7-8, 11, 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gauthier et al. (US 5,415,954), in view of Pasquier (JP 2000-133312.)

Gauthier et al. (US 5,415,954) teaches a polymer battery having at least one layer of a positive electrode, at least one layer of a polymer electrolyte retained by a separator and at least one layer of a negative electrode, each of which is in a thin film form, stacked in this order (see figure 4 and col. 10.) Figure 1 teaches that the electrodes may be stacked or wound to form a

battery (figure 1h, col. 6, lines 10-17.) The electrodes are taught to be in a rectangular, strip shape (see the figures, col. 9, line 20 to col. 10, line 60.) The negative electrode may include a collector tab that protrudes from the electrode (see figure 1c.) The polymer electrolyte separates the positive electrode from the negative electrode. The entirety of the outer peripheries of the separator and of the negative electrode is positioned outside of the outer periphery of the positive electrode except for a collector tab provided to the positive electrode so as to protrude from one side of the positive electrode (see the figures, the corresponding text and specifically figure 4.) The following relationship is satisfied in a portion of the outer peripheries of the separator and of the negative electrode: the length between the end of the negative electrode and the end of the positive electrode (D1) > the length between the end of the negative electrode and the end of the separator (D2) (see figure 4B, for example.)

With regard to claims 7 and 11, MPEP 2113 states, "Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." As the lengths of the positive electrode and electrolyte are within the periphery of the negative electrode, the lithium does not deposit on the end portion of the negative electrode during charge/discharge.

The reference does not teach that the anode is carbon. Pasquier (JP 2000-133312), however, teaches a lithium ion battery having an anode separated from a cathode by an electrolyte separator wherein the anode is graphite, (figures 1-3 and page 19 of the translation.)

The negative electrode and the separator/electrolyte layer are larger than the positive electrode (paragraph bridging pages 20-21.) It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a graphite anode in the battery of Gauthier et al. (US 5,415,954), as Pasquier teaches that graphite intercalated with lithium may be used as the anode of a lithium battery. Since Gauthier teaches a lithium anode, one skilled in the art would recognize that the lithium metal may be replaced with a lithium intercalated graphite from the teachings of Pasquier. The artisan would have found the claimed invention to be obvious in light of the teachings of the references.

The Gauthier reference does not teach a polymer battery wherein the length between the end of the negative electrode and the end of the separator is set at a value which is 20% or less of the length between the end of the negative electrode and the end of positive electrode. Pasquier teaches that the length between the end of the negative electrode and the end of the separator is set at a value which is 20% or less of the length between the end of the negative electrode and the end of positive electrode. It would have been obvious to one of ordinary skill in the art at the time the invention was made to set the length between the end of the negative electrode and the end of the separator at a value which is 20% or less of the length between the end of the negative electrode and the end of positive electrode in order to prevent short-circuiting by contact between the negative electrode and the end of positive electrode. One of ordinary skill in the art would have recognized at the time of the invention that adding more separator/electrolyte between the ends of the opposite electrodes will help prevent contact between the negative electrode and the positive electrode in the event of the jarring the cell, or other like instances, wherein the electrodes are shifted out of alignment.

Claims 13 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gauthier et al. (US 5,415,954) in view of Pasquier (JP 2000-133,312), and further in view of Rouillard et al. (US 6,120,930.)

The teachings of Gauthier et al. (US 5,415,954) and Pasquier (JP 2000-133,312) have been presented. The references do not teach a polymer battery wherein the two sides of the positive electrode are provided with polymer electrolytes, respectively, retained by separators, and at least portions of the separators are linked to each other. Rouillard et al. (US 6,120,930) teaches a polymer battery having at least one layer of a positive electrode, at least one layer of a polymer electrolyte retained by a separator and at least one layer of a negative electrode, each of which is in a thin film form, stacked in this order (see figure 1 and cols. 3-4.) The following relationship is satisfied in a portion of the outer peripheries of the separator and of the negative electrode: the length between the end of the negative electrode and the end of the positive electrode ( $D1$ ) > the length between the end of the negative electrode and the end of the separator ( $D2$ ). The reference teaches a polymer battery wherein the two sides of the positive electrode are provided with polymer electrolytes, respectively, retained by separators. The reference does not teach portions of the separators linked to each other. It would have been obvious to one of ordinary skill in the art at the time the invention was made to include the positive electrodes of Gauthier et al. (US 5,415,954) in a configuration wherein two sides of the positive electrode are provided with polymer electrolytes, as taught by Rouillard et al. (US 6,120,930), as this configuration allows for both electrodes to transfer electrons from a shared current collector as noted in figure 1 of Rouillard. Sharing a current collector between two

adjacent cells will allow for fewer collectors and a lower battery weight. Further, it would have been obvious to one of ordinary skill in the art at the time the invention was made to insulate the end edges of the current collectors from contact with negative electrodes, which will short-circuit the battery. One of ordinary skill in the art would have recognized at the time of the invention that adding more separator/electrolyte between the ends of the opposite electrodes will help prevent contact between the negative electrode and the positive electrode in the event of the jarring the cell, or other like instances, wherein the electrodes are shifted out of alignment. The artesian would have found the claimed invention to be obvious in light of the teachings of the references.

#### ***Response to Arguments***

Applicant's arguments filed 10/26/2007 have been fully considered but they are not persuasive. Applicant has amended the claims and the amended claims have been addressed in the rejections of record.

Applicant further argues that "it is evident that the final office action misconstrued the tab limitation of Applicants' claims in order to evade Applicants' claim requirement that "an outer periphery of the separator and an outer periphery of the negative electrode are positioned entirely outside an outer periphery of the positive electrode except for a collector tab." In other words, the office action is trying to interpret the edge of Gauthier's lithium sheet b which contacts the outlet device f,j as the tab, and thereby ignore the fact that around one if its edges the lithium sheet b of Gauthier et al. does not fulfill the requirement of Applicants' independent claim 8." This argument is not persuasive. First, the claims have been amended to remove the limitation



concerning the tab. Second, applicant's statement that the interpretation is misconstrued is not correct. The collector tab was claimed to be associated with the positive electrode. The negative electrode and the separator have peripheries that are outside of the positive electrode periphery with the exception of the positive electrode current collector. The reference teaches a collector for the negative electrode in figure 1c.

In response to applicant's argument that the references fail to show electrode connection features of applicant's invention, it is noted that the connection features upon which applicant relies are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

#### ***Examiner Correspondence***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark Ruthkosky whose telephone number is 571-272-1291. The examiner can normally be reached on FLEX schedule (generally, Monday-Thursday from 9:00-6:30.) If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached at 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

Application/Control Number:  
10/733,762  
Art Unit: 1795


Page 9

system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free.)

Mark Ruthkosky

Primary Patent Examiner

Art Unit 1745

  
1-3-2008